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PREDICTABILITY OF DENTAL EMERGENCIES BY PANOGRAPHY.(U)
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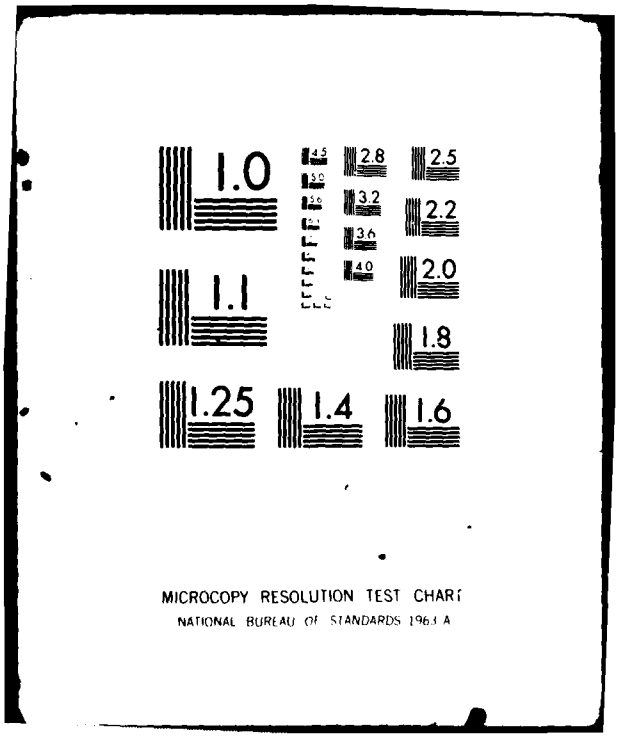
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A study was undertaken to evaluate the effectiveness and reliability of panoramic radiography for prediction of dental emergencies. Five thousand panographs were reviewed, and 732 potential dental emergency situations (PDES) were identified. Over a 6-month period, 248 of the recruits identified as PDES actually reported for dental sick call. This constituted 19 percent of the total sick call. It is believed that by proper interpretation of panographs and by making provisions for interceptive dental care, at least 19 percent of the total sick call could be eliminated.

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PREDICTABILITY OF DENTAL EMERGENCIES BY PANOGRAPHY

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The opinions contained herein are the private views of the authors and are not to be construed as official or as reflecting the views of the Department of the Army or the Department of the Defense.

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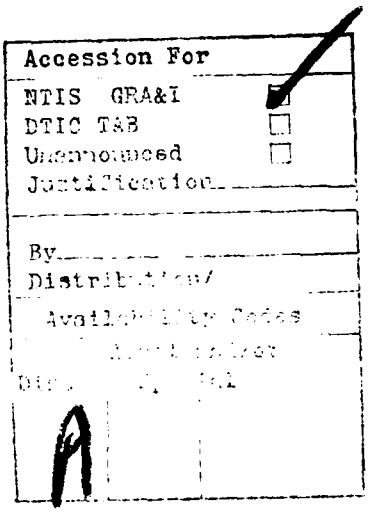
Abstract:

A study was undertaken to evaluate the effectiveness and reliability of panoramic radiography for prediction of dental emergencies. Five thousand panographs were reviewed, and 732 potential dental emergency situations (PDES) were identified.

Over a 6-month period, 248 of the recruits identified as PDES actually reported for dental sick call. This constituted 19 percent of the total sick call. It is believed that by proper interpretation of panographs and by making provisions for interceptive dental care, at least 19 percent of the total sick call could be eliminated.



INTRODUCTION:

Dental emergencies present one of the most exigent problems in dental practice. This problem is especially significant for dentists in the Army, because the unique patient population (recruits with little or no prior dental care) demonstrate a high incidence of dental disease.[1,2]

Various epidemiologic studies have shown the loss of combat effectiveness due to dental emergencies to be of considerable importance.[3-10] During conflicts in Vietnam,[12] Korea,[11] and World War II,[4] loss of personnel due to dental emergencies was a serious problem. Hawryluk[5] reported that during peacetime, the incidence of sick call for dental complaints ranked second only to upper respiratory infections.

The purpose of this study was to evaluate the effectiveness and reliability of panoramic radiographs in predicting dental emergencies. The ultimate objective was to identify a method for reducing the overall incidence of dental emergencies by recognizing potential dental emergency situations (PDES). If the recognition of PDES can be refined and early treatment rendered, dental-related problems during training and assignment at remote locations can be significantly reduced.

MATERIALS AND METHODS

From a panographic survey of 5,000 U.S. Army recruits at Fort Leonard Wood, Missouri,[1] recruits with potential dental emergency situations (PDES) were identified. Their social security numbers (SSN) were recorded and later matched with those recruits who actually reported for dental sick call over a 6-month period.[2] When a

positive match of SSN occurred, it was recorded as a successfully predicted PDES.

Since the dental sick call roster indicated only the patient's identification, and not the cause of the acute episode, the study was limited to predicting which recruit would appear with an acute problem and not which pathosis would become acute. No attempt was made to clinically examine the patients. For the purpose of the study, a PDES was defined as a pathological condition observed on the panograph which appeared to jeopardize the health of adjacent tissue. Criteria employed to establish such situations were based upon the following types of lesions:

1) A gross carious lesion (virgin or recurrent) encroaching upon the pulp (Fig 1).
2) A periapical radiolucent lesion of pulpal and/or periodontal origin (Fig 2). When a lesion showed both gross caries and an apical radiolucency, it was recorded as a periapical lesion.
3) A radiolucent lesion of either odontogenic or non-odontogenic origin demonstrating a marked degree of destruction of the surrounding healthy tissue (Fig 3).
4) An unerupted third molar with or without a pericoronal radiolucency, which was highly suggestive of pericoronitis due to its location in the arch (Fig 4).

RESULTS:

Out of the 5,000 U.S. Army recruits whose panographs were surveyed, 732 were identified as PDES (14.6 percent). Table I shows the distribution of PDES. From this group of 732, 248 recruits actually reported for dental sick call within the 6-month period (a 34 percent prediction rate).

One hundred and nineteen of the 248 recruits visited the dental emergency clinic more than one time, but for the purpose of prediction, they were recorded only once.

DISCUSSION:

A recruit is a new inductee into a service branch who has not had previous military training. Each recruit spends an average of 6-9 weeks in both basic training (BT) and advanced training (AIT), after which he normally receives an assignment at a new post. Only a few recruits remain at the same post where they received BT and AIT. As a result, not all of the individuals were available for monitoring during the entire six months of the study. The post-radiographic evaluation period ranged from 6 weeks to 6 months. It can be reasoned that, if all 5,000 recruits had been available for the duration of the study, both the total number of emergency visits and the prediction rate would have been increased.

The causal factors contributing to the incidence of dental emergencies are clear; however, factors involved in an acute exacerbation of a dormant PDES are not fully understood.

In this study criteria were based upon clinical experience;

therefore, radiographic interpretation was subjective in nature. There are no established criteria for the prediction of dental emergencies. A recent study suggested 20 radiographic and 15 clinical criteria for identifying potential predictors of acute pericoronitis.[13] However, this information was not available at the time this study was undertaken.

SUMMARY:

From an initial panographic survey of 5,000 U.S. Army recruits, it was prognosticated that a PDES was present in 732 (14.6 percent). In reality only 248 of these recruits (34 percent) actually reported to dental sick call within a 6-month period. These individuals accounted for 19 percent of the total dental emergencies occurring in the 5,000 recruits during the same period.

It would appear that a significant number of emergency dental visits could be avoided by early panographic interpretation and by providing interceptive dental care. Further studies are planned to improve the criteria for predicting acute episodes of dormant PDES.

Table I: The distribution of PDES among 5,000 U.S. Army recruits

	PDES	Number	Percent
1)	Gross carious lesion	387	7.74
2)	Periapical radiolucent lesion	219	4.38
3)	Radiolucent lesion/odontogenic or non-odontogenic	24	0.48
4)	Pericoronal radiolucencies	102	2.04
	TOTAL	732	14.64

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Fig 1. Virgin and recurrent carious lesions.

Fig 2. Mandibular left second molar with a periapical radiolucent lesion.

Fig 3. A marked degree of destruction by impacted mandibular right second bicuspid.

Fig 4. Unerupted mandibular third molars with coronal radiolucency (right) and without coronal radiolucency (left).

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Fig I

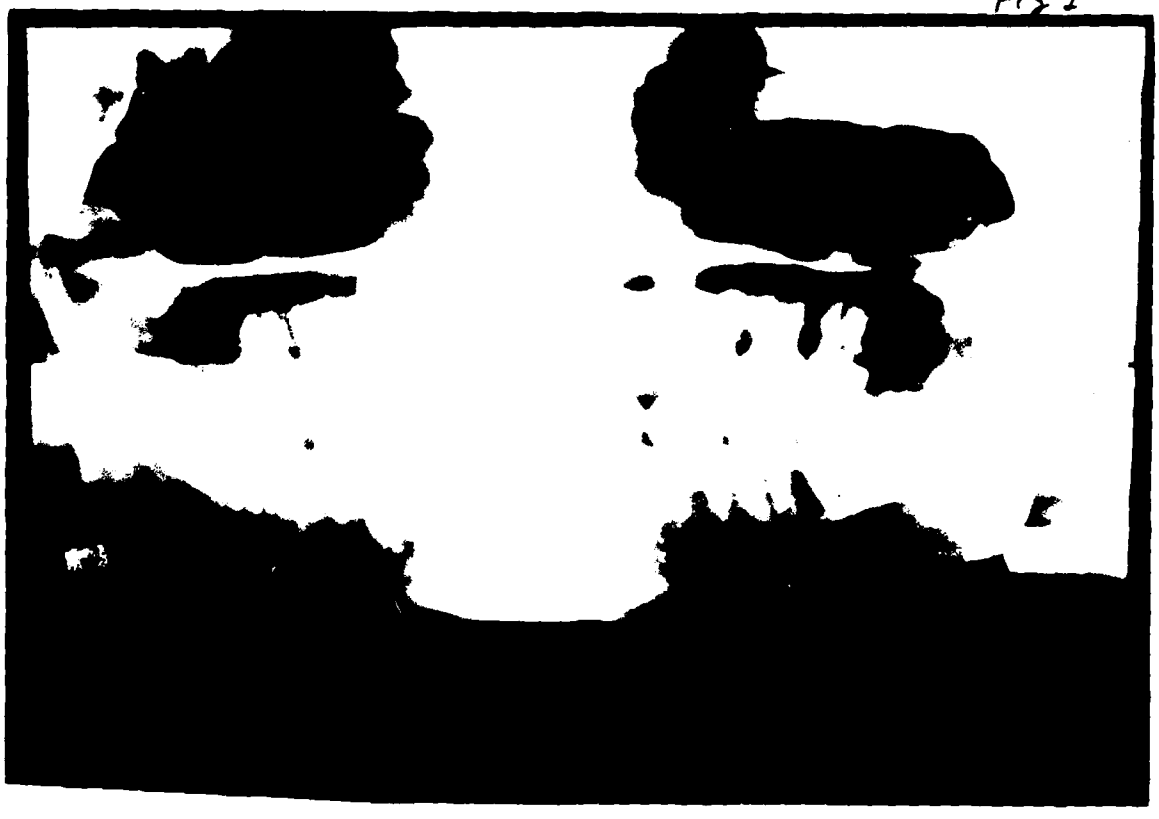

Fig 2.

Fig 3

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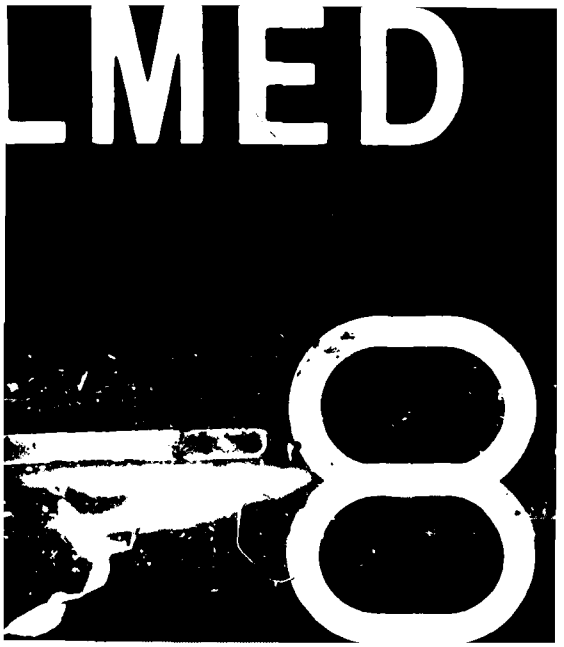
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